

Complete Summary

GUIDELINE TITLE

Guideline for hand hygiene in health-care settings. Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force.

BIBLIOGRAPHIC SOURCE(S)

Healthcare Infection Control Practices Advisory Committee, HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force. Guideline for hand hygiene in health-care settings. MMWR Recomm Rep 2002 Oct 25; 51(RR-16): 1-48. [423 references]

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SCOPE

DISEASE/CONDITION(S)

Infectious diseases transmitted in health care settings

GUIDELINE CATEGORY

Prevention

CLINICAL SPECIALTY

Infectious Diseases
 Nursing
 Preventive Medicine

INTENDED USERS

Health Care Providers
Hospitals
Nurses
Physicians

GUIDELINE OBJECTIVE(S)

- To provide health-care workers (HCWs) with a review of data regarding handwashing and hand antisepsis in health-care settings
- To provide specific recommendations to promote improved hand-hygiene practices and reduce transmission of pathogenic microorganisms to patients and personnel in health-care settings

TARGET POPULATION

- Health care workers (HCWs)
- Patients and personnel in health care settings who have direct or indirect contact with the hands of health care workers

INTERVENTIONS AND PRACTICES CONSIDERED

1. Handwashing
2. Hand antisepsis using various hand hygiene products (e.g., non-antimicrobial and antimicrobial soaps, alcohols, chlorhexidine, chloroxylenol, hexachlorophene, iodine and iodophors, quaternary ammonium compounds, triclosan, other agents)
3. Surgical hand antisepsis
4. Hand lotions or creams to minimize the occurrence of irritant contact dermatitis associated with hand antisepsis or handwashing
5. Other aspects of hand hygiene as they relate to fingernails, artificial nails, gloving, jewelry
6. Health-care worker educational and motivational programs to improve hand hygiene
7. Administrative measures to improve hand-hygiene adherence

MAJOR OUTCOMES CONSIDERED

- Virucidal activity of antiseptic agents against viruses (nonenveloped and enveloped)
- Relative efficacy (based on log₁₀ reductions achieved) of plain soap or antimicrobial soaps versus alcohol-based antiseptics in reducing counts of viable bacteria on hands
- Efficacy of surgical hand-rub solutions in reducing the release of resident skin flora from clean hands
- Hand hygiene practices by health-care workers
- Results of promotion and impact of improved hand hygiene
- Association between improved adherence with hand-hygiene practice and health-care-associated infection rates
- Adverse effects of hand hygiene measures

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Not stated

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Recommendations Grading Scheme

Category I A. Strongly recommended for implementation and strongly supported by well-designed experimental, clinical, or epidemiologic studies.

Category I B. Strongly recommended for implementation and supported by certain experimental, clinical, or epidemiologic studies and a strong theoretical rationale.

Category I C. Required for implementation, as mandated by federal or state regulation or standard.

Category II. Suggested for implementation and supported by suggestive clinical or epidemiologic studies or a theoretical rationale.

No recommendation. Unresolved issue. Practices for which insufficient evidence or no consensus regarding efficacy exist.

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not stated

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Definitions for the levels of evidence and strength of recommendation grading (IA-IC, II, and no recommendation) are provided at the end of the "Major Recommendations" field.

1. Indications for handwashing and hand antisepsis
 - A. When hands are visibly dirty or contaminated with proteinaceous material or are visibly soiled with blood or other body fluids, wash hands with either a non-antimicrobial soap and water or an antimicrobial soap and water (IA)(Larson, 1988).
 - B. If hands are not visibly soiled, use an alcohol-based hand rub for routinely decontaminating hands in all other clinical situations described in items 1C-J (IA)(Pittet et al., 2000; Larson, Eke, & Laughon, 1986; Larson et al., 2001; Widmer, 2000; Bischoff et al., 2000; Graham, 1990; Maury et al., 2000; Boyce, 2001). Alternatively, wash hands with an antimicrobial soap and water in all clinical situations described in items 1C-J (IB)(Maki, 1989; Massanari & Hierholzer, 1984; Doebbeling et al., 1992; Pittet et al., 2000).
 - C. Decontaminate hands before having direct contact with patients (IB)(Mortimer et al., 1962; Semmelweis, No Year).
 - D. Decontaminate hands before donning sterile gloves when inserting a central intravascular catheter (IB)(Eggimann et al., 2000; Bull et al., 1992).
 - E. Decontaminate hands before inserting indwelling urinary catheters, peripheral vascular catheters, or other invasive devices that do not require a surgical procedure (IB)(Ehrenkranz & Alfonso, 1991; Hirschmann et al., 2001).
 - F. Decontaminate hands after contact with a patient's intact skin (e.g., when taking a pulse or blood pressure, and lifting a patient)

- (I B)(Ehrenkranz & Alfonso, 1991; McFarland et al., 1989; Casewell & Phillips, 1977; Mortimer et al., 1962).
- G. Decontaminate hands after contact with body fluids or excretions, mucous membranes, nonintact skin, and wound dressings if hands are not visibly soiled (I A)(Simmelweiss, No Year).
 - H. Decontaminate hands if moving from a contaminated-body site to a clean-body site during patient care (I I)(Ehrenkranz & Alfonso, 1991; Ojajärvi, 1980).
 - I. Decontaminate hands after contact with inanimate objects (including medical equipment) in the immediate vicinity of the patient (I I)(Samore et al., 1996; Ojajärvi, 1980; Boyce et al., 1997).
 - J. Decontaminate hands after removing gloves (I B)(Olsen et al., 1993; Tenorio et al., 2001; Doebbeling et al., 1988).
 - K. Before eating and after using a restroom, wash hands with a non-antimicrobial soap and water or with an antimicrobial soap and water (I B)(Drusin et al., 1987; Doebbeling, Li, & Wenzel, 1993; Standaert, Hutcheson, & Schaffner, 1994; Rodriguez et al., 1996; Schaffner et al., 1969; Viglionese et al., 1991).
 - L. Antimicrobial-impregnated wipes (i.e., towelettes) may be considered as an alternative to washing hands with non-antimicrobial soap and water. Because they are not as effective as alcohol-based hand rubs or washing hands with an antimicrobial soap and water for reducing bacterial counts on the hands of health care workers (HCWs), they are not a substitute for using an alcohol-based hand rub or antimicrobial soap (I B)(Jones et al., 1986; Butz et al., 1990).
 - M. Wash hands with non-antimicrobial soap and water or with antimicrobial soap and water if exposure to *Bacillus anthracis* is suspected or proven. The physical action of washing and rinsing hands under such circumstances is recommended because alcohols, chlorhexidine, iodophors, and other antiseptic agents have poor activity against spores (I I)(Larson & Morton, 1991; Denton, 1991; Gershenfeld, 1962; Russell, 1991).
 - N. No recommendation can be made regarding the routine use of nonalcohol-based hand rubs for hand hygiene in health-care settings. Unresolved issue.
2. Hand-hygiene technique
- A. When decontaminating hands with an alcohol-based hand rub, apply product to palm of one hand and rub hands together, covering all surfaces of hands and fingers, until hands are dry (I B)(Taylor, 1978; Ojajärvi, 1976). Follow the manufacturer's recommendations regarding the volume of product to use.
 - B. When washing hands with soap and water, wet hands first with water, apply an amount of product recommended by the manufacturer to hands, and rub hands together vigorously for at least 15 seconds, covering all surfaces of the hands and fingers. Rinse hands with water and dry thoroughly with a disposable towel. Use towel to turn off the faucet (I B) (Ojajärvi, Mäkelä, & Rantasalo, 1977; Larson et al., 1987; Larson et al., 1986; Larson & Laughon, 1987; Mermel et al., 1997). Avoid using hot water, because repeated exposure to hot water may increase the risk of dermatitis (I B)(qhlenschlaeger et al., 1996; Emilson, Lindberg, & Forslind, 1993).
 - C. Liquid, bar, leaflet or powdered forms of plain soap are acceptable when washing hands with a non-antimicrobial soap and water. When

- bar soap is used, soap racks that facilitate drainage and small bars of soap should be used (II)(McBride, 1984; Kabara & Brady, 1984; Heinze & Yackovich, 1988; Bannan & Judge, 1965).
- D. Multiple-use cloth towels of the hanging or roll type are not recommended for use in health-care settings (II)(Ansari et al., 1991; Larson et al., 1992).
3. Surgical hand antisepsis
- A. Remove rings, watches, and bracelets before beginning the surgical hand scrub (II)(Hoffmann et al., 1985; Salisbury et al., 1997; Field et al., 1996).
- B. Remove debris from underneath fingernails using a nail cleaner under running water (II)(Price, 1938; Lowbury & Lilly, 1975).
- C. Surgical hand antisepsis using either an antimicrobial soap or an alcohol-based hand rub with persistent activity is recommended before donning sterile gloves when performing surgical procedures (IB)(Larson et al., 1990; Hobson et al., 1998; Boyce et al., 1990; Grinbaum, de Mendonça, & Cardo, 1995; Mulberry et al., 2001; AORN, 1999).
- D. When performing surgical hand antisepsis using an antimicrobial soap, scrub hands and forearms for the length of time recommended by the manufacturer, usually 2-6 minutes. Long scrub times (e.g., 10 minutes) are not necessary (IB)(Galle, Homesley, & Rhyne, 1978; Lowbury & Lilly, 1960; Hingst et al., 1992; Pereira, Lee, & Wade, 1990; Dineen, 1969; O'Farrell et al., 1994; O'Shaughnessy et al., 1991; Wheelock & Lookinland, 1997).
- E. When using an alcohol-based surgical hand-scrub product with persistent activity, follow the manufacturer's instructions. Before applying the alcohol solution, prewash hands and forearms with a non-antimicrobial soap and dry hands and forearms completely. After application of the alcohol-based product as recommended, allow hands and forearms to dry thoroughly before donning sterile gloves (IB)(Hobson et al., 1998; Mulberry et al., 2001).
4. Selection of hand-hygiene agents
- A. Provide personnel with efficacious hand-hygiene products that have low irritancy potential, particularly when these products are used multiple times per shift (IB)(Ojajärvi, Mäkelä, & Rontasalo, 1977; Larson et al., 1986; Boyce, Kelliher, & Vallande, 2000; Larson et al., 2001; Larson et al., 1997). This recommendation applies to products used for hand antisepsis before and after patient care in clinical areas and to products used for surgical hand antisepsis by surgical personnel.
- B. To maximize acceptance of hand-hygiene products by HCWs, solicit input from these employees regarding the feel, fragrance, and skin tolerance of any products under consideration. The cost of hand-hygiene products should not be the primary factor influencing product selection (IB)(Larson et al., 1986; Larson, Eke, & Laughon, 1986; Larson et al., 2001; Larson & Killien, 1982; Mayer et al., 1986; Ojajärvi, 1981; Scott et al., 1991).
- C. When selecting non-antimicrobial soaps, antimicrobial soaps, or alcohol-based hand rubs, solicit information from manufacturers regarding any known interactions between products used to clean hands, skin care products, and the types of gloves used in the institution (II)(Walsh, Blakemore, & Drabu, 1987; Jones et al., 2000).

- D. Before making purchasing decisions, evaluate the dispenser systems of various product manufacturers or distributors to ensure that dispensers function adequately and deliver an appropriate volume of product (II)(Kohan et al., 2002).
 - E. Do not add soap to a partially empty soap dispenser. This practice of "topping off" dispensers can lead to bacterial contamination of soap (IA)(Archibald et al., 1997; Grohskopf et al., 2001).
- 5. Skin care
 - A. Provide HCWs with hand lotions or creams to minimize the occurrence of irritant contact dermatitis associated with hand antisepsis or handwashing (IA)(Berndt et al., 2000; McCormick, Buchanan, & Maki, 2000).
 - B. Solicit information from manufacturers regarding any effects that hand lotions, creams, or alcohol-based hand antiseptics may have on the persistent effects of antimicrobial soaps being used in the institution (IB)(Walsh, Blakemore, & Drabu, 1987; Dharan et al., 2001; Heeg, 2001).
- 6. Other Aspects of Hand Hygiene
 - A. Do not wear artificial fingernails or extenders when having direct contact with patients at high risk (e.g., those in intensive-care units or operating rooms) (IA)(Moolenaar et al., 2000; Passaro et al., 1997; Foca et al., 2000; Parry et al., 2001).
 - B. Keep natural nails tips less than 1/4-inch long (II)(Moolenaar et al., 2000).
 - C. Wear gloves when contact with blood or other potentially infectious materials, mucous membranes, and nonintact skin could occur (IC)(Occupational Safety, 1991).
 - D. Remove gloves after caring for a patient. Do not wear the same pair of gloves for the care of more than one patient, and do not wash gloves between uses with different patients (IB)(Olsen et al., 1993; Tenorio et al., 2001; Doebbeling et al., 1988; Patterson et al., 1991).
 - E. Change gloves during patient care if moving from a contaminated body site to a clean body site (II)(Olsen et al., 1993; Pittet et al., 1999; Tenorio et al., 2001).
 - F. No recommendation can be made regarding wearing rings in health-care settings. Unresolved issue.
- 7. Health-care worker educational and motivational programs
 - A. As part of an overall program to improve hand-hygiene practices of HCWs, educate personnel regarding the types of patient-care activities that can result in hand contamination and the advantages and disadvantages of various methods used to clean their hands (II)(Pittet et al., 2000; Conly et al., 1989; Dubbert et al., 1990; Raju & Kobler, 1991).
 - B. Monitor HCWs' adherence with recommended hand-hygiene practices and provide personnel with information regarding their performance (IA)(Pittet et al., 2000; Mayer et al., 1986; Conly et al., 1989; Dubbert et al., 1990; Raju & Kobler, 1991; Tibballs, 1996; Avila-Agüero et al., 1998).
 - C. Encourage patients and their families to remind HCWs to decontaminate their hands (II)(McGuckin et al., 1999; McGuckin et al., 2001).
- 8. Administrative measures

- A. Make improved hand-hygiene adherence an institutional priority and provide appropriate administrative support and financial resources (IB)(Pittet et al., 2000; Larson et al., 2000).
- B. Implement a multidisciplinary program designed to improve adherence of health personnel to recommended hand-hygiene practices (IB)(Pittet et al., 2000; Larson et al., 2000).
- C. As part of a multidisciplinary program to improve hand-hygiene adherence, provide HCWs with a readily accessible alcohol-based hand-rub product (IA)(Pittet et al., 2000; Larson et al., 2001; Bischoff et al., 2000; Graham, 1990; Maury et al., 2000).
- D. To improve hand-hygiene adherence among personnel who work in areas in which high workloads and high intensity of patient care are anticipated, make an alcohol-based hand rub available at the entrance to the patient's room or at the bedside, in other convenient locations, and in individual pocket-sized containers to be carried by HCWs (IA)(Pittet, Mourouga, & Perneger, 1999; Pittet et al., 2000; Larson et al., 2001; Bischoff et al., 2000; Pittet, 2001; Maury et al., 2000; Voss & Widmer, 1997; Girou & Oppein, 2001).
- E. Store supplies of alcohol-based hand rubs in cabinets or areas approved for flammable materials (IC).

Definitions:

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Category IB. Strongly recommended for implementation and supported by certain experimental, clinical, or epidemiologic studies and a strong theoretical rationale.

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No recommendation. Unresolved issue. Practices for which insufficient evidence or no consensus regarding efficacy exist.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

[References open in a new window](#)

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Appropriate selection of hand-hygiene products to maximize efficacy while minimizing adverse effects
- Improved hand-hygiene practices and improved adherence of hand-hygiene practices of health care workers (HCWs)
- Reduction of transmission of pathogenic microorganisms to patients and personnel in health-care settings

POTENTIAL HARMS

Hand-hygiene measures may result in irritant contact dermatitis and/or allergic contact dermatitis.

Subgroups Most Likely to be Harmed:

Health care workers with more frequent exposure to irritating agents (particularly anionic detergents) are more likely to experience irritant contact dermatitis.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

This guideline and its recommendations are not intended for use in food processing or food-service establishments, and are not meant to replace guidance provided by the Food and Drug Administration's (FDA's) Model Food Code.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Performance Indicators

The following performance indicators are recommended for measuring improvements in health care workers' (HCWs) hand-hygiene adherence:

- Periodically monitor and record adherence as the number of hand-hygiene episodes performed by personnel/number of hand-hygiene opportunities, by ward or by service. Provide feedback to personnel regarding their performance.
- Monitor the volume of alcohol-based hand rub (or detergent used for handwashing or hand antisepsis) used per 1,000 patient-days.
- Monitor adherence to policies dealing with wearing of artificial nails.

- When outbreaks of infection occur, assess the adequacy of health-care worker hand hygiene.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Staying Healthy

IOM DOMAIN

Effectiveness
Safety

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Healthcare Infection Control Practices Advisory Committee, HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force. Guideline for hand hygiene in health-care settings. MMWR Recomm Rep 2002 Oct 25; 51(RR-16): 1-48. [423 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2002 Oct

GUIDELINE DEVELOPER(S)

Centers for Disease Control and Prevention - Federal Government Agency [U.S.]

GUIDELINE DEVELOPER COMMENT

The guideline recommendations have been prepared by a Hand Hygiene Task Force, comprising representatives from the Healthcare Infection Control Practices Advisory Committee (HICPAC), the Society for Healthcare Epidemiology of America (SHEA), the Association for Professionals in Infection Control (APIC), and the Infectious Diseases Society of America (IDSA).

SOURCE(S) OF FUNDING

United States Government

GUIDELINE COMMITTEE

Healthcare Infection Control Practices Advisory Committee
Hand Hygiene Task Force

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available from the Centers for Disease Control and Prevention (CDC) Web site:

- [HTML Format](#)
- [Portable Document Format \(PDF\)](#)

Print copies: Available from the Centers for Disease Control and Prevention, MMWR, Atlanta, GA 30333. Additional copies can be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-9325; (202) 783-3238.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on January 16, 2003. This information was not verified by the developer.

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The logo for FIRST GOV, with "FIRST" in blue and "GOV" in red, and a small red star above the "I".

